UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO ATTENTION OF:

NOV 2 8 1989

5HS-11

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Re: NL Industries/Taracorp-Granite
City, Illinois Site ("the Site")

Dear Sir/Madam:

The United States Environmental Protection Agency (U.S. EPA) has documented the release or threatened release of hazardous substances, pollutants and/or contaminants at the above referenced Site. A Remedial Investigation/ Feasibility Study (RI/FS) has been initiated at the Site pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. Section 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986, Public Law 99-499 (CERCLA). The RI/FS is being prepared by NL Industries, Inc. pursuant to an Administrative Order by Consent (AOC).

Pursuant to its authority under Section 104(a) of CERCLA, U.S. EPA is issuing this general notice letter to notify you of potential liability which you may have incurred with respect to the Site, and to provide you with an opportunity to enter into negotiations to voluntarily undertake the completion of any future remedial actions. Since a RI/FS is currently on-going at the Site, special notice procedures pursuant to Section 122(e) of CERCLA are not being used at this time, but may be used in the future. Before initiating a remedial action at the facility, U.S. EPA may, in its discretion, determine that a moratorium period for formal negotiations as set forth in Section 122(e) would facilitate agreement and expedite remedial action. As noted below, completion of the RI/FS is anticipated for March 1990 at which time the Agency may issue a special notice letter to initiate the moratorium period for settlement negotiations.

The Remedial Investigation (RI) Report, which describes the findings on the nature and extent of contamination at the Site, was finalized in January 1989. The Feasibility Study (FS) Report, which evaluates various

remedial alternatives for the Site, is expected to be released in January 1990. A Proposed Plan identifying U.S. EPA's and IEPA's preferred remedial action for the Site will also be available in January 1990. Following the release of the FS Report and Proposed Plan, a release public comment period will be held by U.S. EPA and the Illinois Environmental Protection Agency (IEPA). Subsequent to the public comment period, the Regional Administrator will issue a Record of Decision (ROD) selecting the appropriate remedial action for the Site. Unless the U.S. EPA determines that a potentially responsible party (PRP) will voluntarily undertake the remedial action necessary at the Site, U.S. EPA is authorized by Section 104 of CERCLA to undertake the remedial action itself and under Section 107 of CERCLA to seek reimbursement from PRPs of all costs incurred in connection with the action taken. Such costs may include, but are not limited to, expenditures for investigation, planning, response and enforcement activities. Moreover, under Section 106 of CERCLA, U.S. EPA may order responsible parties to implement those relief actions deemed necessary by U.S. EPA to protect public health, welfare or the environment.

Responsible parties under Section 107 of CERCLA include: current owners and operators of the Site, former Site owners and operators at the time of disposal of hazardous substances, persons who owned or possessed hazardous substances and arranged for disposal, treatment, or transportation of such hazardous substances and persons who accepted hazardous substances for transportation for disposal or treatment to a facility selected by such transporter. U.S. EPA has information indicating that you are a PRP with respect to the Site. The information utilized in identifying PRPs at the Site is briefly summarized in Paragraph A of Attachment I of this letter.

By this letter, U.S. EPA notifies you of your potential liability with regard to this matter and encourages you, as a potentially responsible party, to voluntarily perform or finance the response activities that U.S. EPA has determined or will determine are required at the Site.

Under the AOC, NL Industries, Inc. has already undertaken certain actions in response to conditions at the Site. These response actions are summarized in Paragraph B of Attachment I to this letter.

U.S. EPA is currently planning to conduct the following additional response activities at the Site:

(1) Design and implementation of the remedial action selected and approved by U.S. EPA and IEPA for the Site; and

(2) Provision of any monitoring, operation and maintenance necessary at the Site after the remedial action is completed.

In addition to those activities enumerated above, U.S. EPA may, pursuant to its authorities under CERCLA, decide that other clean-up activities are necessary to protect public health, welfare and the environment.

U.S. EPA is seeking to obtain certain other information that you may have pursuant to its authority under Section 104 of CERCLA, 42 U.S.C. Section 9604, and Section 3007 of the Resource Conservation and Recovery Act (RCRA) as amended, 42 U.S.C. Section 6927, for the purpose of enforcing CERCLA and RCRA and for the purposes of assisting in determining the need for response to a release of hazardous substances(s) under CERCLA. The Administrator of the U.S. EPA has the authority to require any person who generates, stores, treats, transports, disposes, arranges for the disposal of, or otherwise handles hazardous wastes and hazardous substance, as those terms are defined in Section 1004(5) of RCRA, 42 U.S.C. Section 6903(5) and Section 101(14) of CERCLA, 42 U.S.C. Section 9601(14), to furnish U.S. EPA with information related to such activities. Pursuant to these statutory provisions, you are hereby requested to submit the information requested below.

1. Copies of all shipping documents or other business documents relating to the transportation, treatment, storage or disposal of waste materials or substances at the above referenced Site.

2. A detailed description of the generic common and/or trade name and the chemical composition and character (i.e. liquid, solid, sludge) of the waste material offered by you for transportation to, treatment, storage or disposal at the above referenced Site.

3. For each hazardous substance identified above, please give the total volume, in gallons for liquids and in cubic yards for solids, for which you arranged treatment or disposal, and list when treatment or disposal occurred.

4. What arrangements were made to transport your hazardous substances to the above referenced Site? What type of transportation was used (i.e. tankers, dump trucks, drums)?

5. Who was the transporter of your hazardous substances, what was his previous address, and what is his current address?

6. Copies of all records, including analytical results, which indicate the chemical composition and/or chemical character of the waste material(s) transported to, treated, stored or disposed of at the above referenced Site or offered for transportation to, treatment, storage or disposal at the Site.

7. Any additional information which may help U.S. EPA to identify other companies or individuals that transported or arranged for the transportation of waste materials to the Site.

8. A list of all individuals responsible for obtaining the information included in or who participated in preparing your response to this request for information.

To assist you in answering this request, the information sought pertains to any and all information in your possession, custody or control relating to the operation of the above referenced Site and to the transportation, storage, treatment or disposal of hazardous substances or the generation of hazardous substances which were ultimately treated or disposed of or offered for disposal or treatment at the NL Industries/Taracorp-Granite City, Illinois Site. The relevant time period for this request is from the first time waste was handled or received at the Site through the present.

For purposes of this information request, "shipping documents" shall mean all contracts, agreements, purchase orders, requisitions, pick-up or delivery tickets, customs forms, freight bills, shipping memoranda, order forms, weight tickets, work orders, manifests, shipping orders, packing slips, bills of lading, invoices, bills and any other similar documents that evidence discrete transactions involving shipment, or the arrangement for shipment, of waste materials to, through, or from, the above referenced Site. "Waste materials" shall mean hazardous substances, solid wastes and hazardous wastes, and other materials which may or may not contain pollutants or contaminants, and shall include reclaimed and off-specification materials of any kind.

The information sought herein must be sent to U.S. EPA with thirty (30) calendar days of your receipt of this letter. This information may be used by U.S. EPA in any civil administrative or criminal proceeding. Under Section 3008 of RCRA, 42 U.S.C. Section 6928, failure to comply with this request may result in an order requiring compliance or in a civil action for appropriate relief. These provisions also provide for civil penalties. Failure to comply with this request under Section 104 of CERCLA, 42 U.S.C. Section 9604 may result in a civil enforcement action being brought against you by U.S. EPA. An enforcement action may include the assessment of penalties of up to $25,000 per day for each day of continued noncompliance.

The information requested herein must be provided notwithstanding its possible characterization as confidential information or trade secrets. You may request, however, that any such information be handled as confidential business information. A request for confidential treatment must be made when the information is provided, since any information not so identified will not be accorded this protection by the U.S. EPA. Information claimed as confidential will be handled in accordance with the provisions of 40 C.F.R. Part 22.

The written statements submitted pursuant to this request must be notarized and submitted under an authorized signature certifying that all information contained therein is true and accurate to the best of the signatory's knowledge and belief. Moreover, any documents submitted to Region V

pursuant to this information request should be certified as true and authentic to the best of the signatory's knowledge and belief. Should the signatory find, at any time after the submittal of the requested information, that any portion of the submittal of the requested information is false, the signatory should so notify U.S. EPA. If any answer certified as true should be found to be untrue, the signatory can and may be prosecuted pursuant to 18 U.S.C. Section 1001.

Your reply to request for information under Section 104 of CERCLA and Section 3007 of RCRA should be sent to the address listed below:

U.S. Environmental Protection Agency
Gladys Watts, 5HS-12
230 South Dearborn Street
Chicago, Illinois 60604

As a PRP, you should also notify U.S. EPA in writing within 30 days of receipt of this letter of your willingness to perform or finance the activities described above. If U.S. EPA does not receive a timely response, U.S. EPA will assume that your organization does not wish to negotiate a resolution of its potential responsibility in connection with the Site and that your organization has declined any involvement in performing the response activities. Your letter should also indicate the appropriate name, address and telephone number for further contact with you.

If you are already involved in discussions with state or local authorities, engaged in voluntary clean-up action or involved in a lawsuit regarding this Site, you should continue such activities as you see fit. This letter is not intended to advise you or direct you to restrict or discontinue any such activities; however, you are advised to report the status of those discussions or actions in your response to this letter and to provide a copy of your response to any other parties involved in those discussions or actions. Your response letter should be sent to:

U.S. Environmental Protection Agency
Brad Bradley, 5HS-11
Remedial and Enforcement Response Branch
230 South Dearborn
Chicago, Illinois 60604

U.S. EPA would like to encourage good faith negotiations between you and the Agency and among you and other PRPs for the Site. To assist the PRPs in negotiating with U.S. EPA concerning this matter, U.S. EPA is providing a list of the names and addresses of any other PRPs to whom this or a similar notification is being or has been sent. This list is appended as Attachment II to this letter. It should be noted that inclusion on or exclusion from the list does not constitute a final determination by the Agency concerning the liability of any party for remediation of Site conditions or payment of past costs. Information regarding a ranking by volume and nature of

substances contributed by each PRP, as contemplated by Section 122(e)(4)(A), is not available at this time. An assembly of remedial action alternatives for the Site is appended for your information as Attachment III.

In order to effectively negotiate a settlement, it is important for the PRPs to organize themselves and establish a steering committee for negotiations. The U.S. EPA and IEPA would like to schedule a meeting with the PRPs to discuss the Site. The meeting is scheduled for 9:00 a.m. December 18, 1989 at the Americana Congress Hotel, 520 South Michigan Avenue, Chicago, Illinois (phone-(312) 427-3800).

If you need further information regarding this letter, you may contact Brad Bradley of the Remedial and Enforcement Response Branch at (312) 886-4742. If you have an attorney handling your legal matters, please direct his or her questions to Steven Siegel of the Office of Regional Counsel, U.S. EPA, Region V, at (312) 353-1129.

By a copy of this letter, the U.S. EPA is notifying the State of Illinois and the Natural Resources Trustees, in accordance with Section 122(j) of CERCLA, of the Agency's intent to enter into negotiations concerning the implementation of remedial action at the Site, and is also encouraging them to consider participation in such negotiations.

It should be noted that the factual and legal discussions in this letter are intended solely to provide notice and information, and such discussions are not to be construed as a final agency position on any matter set forth herein.

The U.S. EPA strongly encourages you to submit a written response within the time frames specified herein and to take immediate steps to organize into a Committee or Committees to negotiate an agreement with U.S. EPA to undertake the remedial actions at the Site. We hope that you will give this matter your immediate attention.

Sincerely yours,

John Kelley, Acting Chief
Remedial and Enforcement Response Branch

Attachments

cc: Sheila Huff, DOI
William Seith, Assistant Attorney General
Ken Miller, IEPA
Mark Frech, IDOC
Don Etchison, IDENR
Don Vonnahme, IDOT

ATTACHMENT I

A. U.S. EPA has evaluated a body of evidence in connection with its investigation of the Site, including records from the State of Illinois, site investigation reports, State and federal legal agreements pertaining to the Site and surrounding properties, etc. Based on this evidence, U.S. EPA has information indicating that you are a potentially responsible party with respect to this Site. Specifically, U.S. EPA has reason to believe that you did, by contract, agreement, or otherwise, arrange for the disposal, treatment or transportation for disposal or treatment of hazardous substances found at the Site.

B. NL Industries, Inc. has conducted or is conducting the following studies and/or activities at the Site:

1. Remedial Investigation - to determine the nature and extent of contamination at the Site.

2. Feasibility Study - to evaluate the feasibility of possible alternatives to remediate the Site contamination identified during the Remedial Investigation.

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A. U.S. EPA has evaluated a body of evidence in connection with its investigation of the Site, including records from the State of Illinois, site investigation reports, State and federal legal agreements pertaining to the Site and surrounding properties, etc. Based on this evidence, U.S. EPA has information indicating that you are a potentially responsible party with respect to this Site. Specifically, U.S. EPA has reason to believe that you own or leases or formerly owned or leased property which comprises the NL Industries/Taracorp Site.

B. NL Industries, Inc. has conducted or is conducting the following studies and/or activities at the Site:

1. Remedial Investigation - to determine the nature and extent of contamination at the Site.

2. Feasibility Study - to evaluate the feasibility of possible alternatives to remediate the Site contamination identified during the Remedial Investigation.

ATTACHMENT I

A. U.S. EPA has evaluated a body of evidence in connection with its investigation of the Site, including records from the State of Illinois, Site investigation reports, State and federal legal agreements pertaining to the Site and surrounding properties, etc. Based on this evidence, U.S. EPA has information indicating that you are a potentially responsible party with respect to this Site. Specifically, U.S. EPA has reason to believe that you are the owner/operator of the Site as defined in Section 101(20)(A) of CERCLA, 42, U.S.C. Section 9601 (20)(A).

B. NL Industries, Inc. has conducted or is conducting the following studies and/or activities at the Site:

1. Remedial Investigation - to determine the nature and extent of contamination at the Site.

2. Feasibility Study - to evaluate the feasibility of possible alternatives to remediate the Site contamination identified during the Remedial Investigation.

Attachment II
Other PRPs Receiving Notification

Names and Addresses of Supplier of
Non-Virgin Material to Granite City, Illinois

A. Miller & Company	PO Box 695 Peoria, Illinois 61652
A. Tenenbaum	4500 Bethany Road N. Little Rock, AR 72117
Aaron Ferer & Sons Co.	POB 6478 Church St. Station NY, NY 10249
A.B.F. Metal Co.	St. Louis, MO.
Ace Comb Company	West 2nd Street, Booneville, AR 72927
Ace Scrap Metal Processors	3100 N. Broadway St. Louis, MO. 63147
Acme Battery Manufacturing Company	3340 Morganford St. Louis, MO. 63110
Acro Sales & Engineering, Inc.	W 137 N. 5540 Williams Place, Menomonee Falls WI 53051
Active Metal Company	5150 16th Street, Detroit, MI 66208
Aetna Metals, Inc.	13535, Helen Street, Detroit, MI 48212
Afram Bros, Co.	900 South Water Street, Milwaukee, WI 53204
Allied Metal Company	2059 South Canal Street, Chicago, Il 60616
Alter Company	2333 Rockingham Road, Davenport IA 53808
Alumax Foils	No address given

Amax Lead and Zinc[1]	Amax Inc./Amax Lead and Zinc 200 Park Avenue NY, NY 10166
American Can Co.	755 Prior Avenue St. Paul, MN 55104
American Industrial Linings, Inc.	1390 Kingsland Avenue St. Louis, MO. 63133
American Smelting & Refining Company	120 Broadway, NY, NY 10005
Ametalco Inc.	Amax Inc./ Ametalco Inc. 200 Park Avenue NY, NY 10166
Andersen Steel, Inc.	POB 448 Fairfield, IA 52566
Anzon America, Inc.	Freehold, NJ
A.O. Smith Corp.	POB 28 Kankakee, IL
Asarco, Inc.[2]	POB 7019 Church Street Station, NY, NY 10008
Astron Manufacturing Co.	12th and Mc Kinney Streets Chicago, IL
Associated Metals & Minerals corp	733 Third Avenue NY, NY 10017
Baker Iron & Metal	Box 11040 Lexington, KY 40511
Barter Machinery & Supply Co.	215 Santa Fe Drive Denver, CO 80223

[1] Amax Lead and Zinc receipts were as follows: 12 receipts of "corroding" lead; 1 of Anodes; 12 of Scrap Anodes; 1 of AG Dross; 1 of AG Scrap; 1 of Desilverized lead; 1 of Scrap Silver Lead.

[2] Asarco, Inc. supplied mainly virgin materials but also "common lead" and 2 Bdls of lead - type unspecified.

Batco Inc.	7777, Bon Homme Clayton, MO 63105
Bear Manufacturing	PO Box 10159 Rock Island, IL 62201
Becker Metals Corp.	PO Box 14008-B St. Louis, MO 63178
Bell City Battery Company	915 South Charles Street Belleville, IL 62221
Ben Greenberg Co.	POB. 450 Dyersburg, TN 38024
Benjamin Air Rifle Co.	1525 South 8th Street, St. Louis, MO 63104
Berlinski & Sons	POB 733 Juliet, IL 60434
Bill Bergmeyer	R.R.2 Box 238 Bowling Green, MO 63334
Billiton Metals & Ores	POB 1156 Church St. Station NY, NY 10249
Bill's Auto Parts	471 South Capital Ave. Gerydon, IN 47112
Bill's Salvage	POB 398 Cobden, IL 62920
Billy Morrow	Box 132 Hurdland, MO 63547
Bob Keller Batteries Warehouse	2671 Washington St. Louis, MO 63103
Briggs Used Auto Parts	7 W. Buckeye Casey, IL 62420
Bunker Hill Company	Pintlar Corp/Bunker Hill Company 505 Front Ave., Suite 303 PO Box 2199 Coeur d'Alene Idaho 83814
Burlington	Granite City

Bussman Manufacturing Company a division of Mc Graw-Edison Co.	2536 W. University St. Louis, MO 63107
Call Pub. Co. Inc.	9, N. Division Street, Duquoim, IL 62832
Campbell Soup	Campbell Place Camden, NJ 08101-0391
CBC Inc.	3001, Fairfax Traffic Way Kansas City, KS 66115
Central Iron & Metal Company	PO Box 1180 Springfield, IL 62705
Central Salvage	1433 NW 5th Street Oklahoma City, OK 73106
Central Waste Materials	1510 N. Broadway St. Louis, MO.
Centritech Corporation	PO Box 14552 Houston, TX 77021
Cerro Copper Products	PO Box 93739 Chicago, IL 60670
Chanen's Inc.	PO Box 766 Quincy, IL 62301
Charles W. Johnson	503 N. Sangamon Lincoln, IL 62656
Chemetco	PO Box 187 Alton, IL 62002
Chicago Battery	No address given
Chrysler Corp.	1001 N. Highway Drive Fenton, MO 63026
C.L. Downey Company	9th and Colfax Avenue Hannibal, MO 63401
CNC Industries, Inc.	330 Crossen Elk Grove Village, IL 60007
Comfort Printing and Stationery Co.	1611 Locust Street St. Louis, MO 63106

Cominco Ltd[3]	1) POB 93929 Chicago, IL 60676 2) 120 Adelaide St. West Toronto, Ontario Canada M5H ITI
Commercial Metals Co.	P.O. Box 1046 Dallas, TX 75221-1046
Consolidated Wastes Material	6730 Wilson Road Kansas City, MO 64125
Continental Can Company	800 Connecticut Ave. P.O. Box 5410 Norwalk, CT 06856
Cosco Graphics	11548 Adie Road Maryland Heights, MO.
Crown Cork &n Seal Co.	3501 West 31st Street Chicago, IL 60623
D. Pollack & Sons	1509 West Cortland Chicago, IL 60622
Del Rich Battery & Metal Co.	510 Schmidt Road Davenport, IA 52808
Delco-Remy; Division of General Motors Corp.	General Motors Corporation/ Delco Remy Division 3031 West Grand Blvd. P.O. Box 33122 Detroit, MI 48232
Delta Metals & Paper Recycling, Inc.	1436 Mullanphy St. Louis, MO 63106
Diversified Metals	1034 S. Brentwood Blvd. Richmond Heights, MO 63117
Don Hibbeler	12814 Sycamore Lane Palos Heights, IL 60463

[3] Cominco Ltd. receipts as follows: 6 of Corroding Lead; 1 of Virgin Lead; 6 of Antimonial Lead; 10 of Antimony; 10 of Lead.

Dudley Auto Radiator	1509 7th Street Madison, IL
Ed Parkinson	129 South Ely Mounds, IL 62964
Edwardsville Intelligencer	117 N. 2nd Street Edwardsville, IL 62025
E.J. Pfeifer Iron & Metal	522 S. First Stockton, KS 67669
Elden R. Erickson & Sons, Inc.	5383 Swanson Road Roscoe, IL 61073
Equipment Engineering Company	No address given
ESB Inc.	Exide Corp./ESB Inc. P.O. Box 14205 Reading, PA 19162-4205
Essex Group	N. Manchester
Fabricators Int.	No address given
Farmland	No address given
Far West Sport	13313 Reeder Road S.W. Olympia, WA 98502
Federal Alloys Corp.	2930 Denton Street Detroit, MI 48211
Federal Cartridge Corporation	1) 9th and Tyler Street Anoka, MN 55303 2) Buick, MO 3) Omaha, NE
Federal Iron & Metal	6820 St. Charles Rock Road St. Louis, MO 63133
Feinberg Bros. Iron & Metal	1335 Cypress Kansas City, MO 64127
Finer Metal Co.	5900 Manchester Ave. St. Louis, MO 63110
Fisher Body Division of General Motors Corporation	General Motors Corporation/ Fisher Body Division 3031 West Grand Blvd.

	P.O. Box 33122 Detroit, MI 48232
Ford Motor Company	Parklane Towers West Suite 401 One Parklane Blvd Dearborn, MI 48126
Fundamental Metals & Minerals	30 Rockefeller Plaza Suite 1933 New York, NY 10020
Gary's Metal	RR 3, Box 290 Carterville, IL 62918
Gebco	Granite City, IL
General Battery Corp.	Exide Corp./General Battery Corp. POB 14205 Reading, PA 19162-4205
General Motors Corporation	3031 West Grand Blvd. P.O. Box 33122 Detroit, MI 48232
General Waste Products, Inc.	201 South 7th Ave. Evansville, IN 47730
Globe Union	Johnson Controls Inc/ Globe Union 5757 N. Green Bay Avenue P.O. Box 591 Milwaukee, WI 53201
Glosser Metal Company	P.O. Box 114 Hidalgo, IL 62432
Gopher Smelting & Refining	3385 Highway 49 St. Paul, MN 55121
Gould Inc.	Ten Gould Center Rolling Meadows, IL 60008
Graham Metal Corporation	412 Graham Avenue Benton Harbor, MI 49022
Great Lakes Carbon Corporation	P.O. Box 86 St. Louis, MO 63166

Grossman Metals Corp.	5 North Market Street St. Louis, MO 63102
GSA	No address given
GT Metals	Rd. 4, Box 400-B Muskogee, OK 74401
H. Brecker & Son	P.O.B. 28 Platteville, WI 53818
H.C. Duke & Son, Inc.	2116 Eighth Ave. East Moline, IL 61244
Henry Rautbort	517 West VanBuren Clinton, IL 61727
Highland Park Waste Material	1466 Berkeley Road Highland Park, IL 60035
Houston Salvage	1355 West Highway 17 Houston, MO 65483
H.S. Kaplan Scrap Iron & Metal	P.O.B. 3626 St. Paul, MN 55165
Hunter's Reloading Supply	1210 St. Michael Street Cahokia, IL 62206
ICC Metals Co.	New York, NY
Imperial Smelting Corporation	1031 E. 103rd Street Chicago, IL 60628
Indussa	New York, NY
Industrial Chemicals Corp.	720 5th Avenue New York, NY 10019
Inland Metals Refining Co.	651 East 119th Street Chicago, IL 60628
InterCity Metal Co.	8400 Truman Road Kansas City, MO
Intsel Corporation	835 3rd Avenue New York, NY 10022
J. Soloman & Sons	17th and Cedar Street Cairo, IL 62914

J. Trockman & Sons, Inc.	Highway 41 South Evansville, IN 47702
James H. Tessem	1705 N.E. Perry Peoria, IL 61603
Jay Metal Processing	1302 NE 29th Forth Worth, TX 76106
Johnson Metal Co.	3056 Hamilton Ave. Racine, WI 53403
Kamen Iron & Metal Co.	P.O. Box 485 Wichita, KS 67214
Kansas City Battery Company	744 Southwest Blvd. Kansas City, KS 66103
Kemco Metal Processing	123 Byasse Drive Hazelwood, MO 63042
Kennecott Refining Corp.	Baltimore, MD
Kraft Chemical Company	917 West 18th Street Chicago, IL 60508
K.W. Battery[4]	3555 Howard Street Skokie, IL 60076
L. Kahn & Son	P.O. Box 569 Havanna, IL
LaSalle Steel Co.	1412 E. 150th Street Hammond, IN 46327
Ladyman Engineering Enterprises	723 Kirkwood Drive Dallas, TX 76128
Larry Good & Company	260 Old State Road Ellisville, MO 63011
Lefton Iron & Metal Company	P.O. Box 219 East St. Louis, IL 62202
Leslie Cooper Battery & Metal	P.O. Box 4166 Davenport, IA 52808

[4] Present communications address for K.W. Battery: c/o Janice M. Edwards, Mc Dermott Will & Emery, 111 West Monroe Street, Chicago IL 60603.

Lissner Corporation	1000 North Branch Chicago, IL 60622
Lopez Scrap Metal, Inc.	P.O. Box 17741 El Paso, TX 79917
M. Gervich & Son, Inc.	707 E. Nevada Street P.O. Box 67 Marshalltown, IA 50158
M. Katch	Topeka, KS
M. Ruben Metal Co.	2416 So. Archer Ave. Chicago, IL 60616
MacGlashen Enterprises	1641 So. Sinclair Anaheim, CA 92806
Madewell & Madewell[5]	P.O. Box 386 Jones, OK 73049
Madewell Metals Corporation	310 Shawnee Bypass Box 1432 Muskogee, OK 74401
Madison Scale	Madison, IL
Mallin Bros. Co.	3211 Gardner Avenue Kansas City, MO 64120
Marchem Resources, Inc.	P.O. Box 35361 Houston, TX 77035
Marco Steel Supply	302 S. Market St. Champaign, IL 61820
Mardians, Inc.	P.O. Box 370 Mobridge, SD 57601
Max Schwartzman & Sons, Inc.	2905 North Ferry Anoka, MN 55303
McDonnell - Douglas	No address given

[5] Present communications address for Madewell & Madewell: c/o Wesley C. Fredenburg, Esq., Crowe & Dunlevy, 1800 Mid-American Tower, 20 North Broadway, Oklahoma City OK 73102.

McGraw - Edison Co.	502 Earth City Plaza P.O. Box 14460 St. Louis, MO 63178
McKinley Iron Co.	3620 North Hall Street St. Louis, MO 64147
Meyer Battery Service	1004 E. 12th Street Joplin, MO
Mid-Missouri Metal	P.O. Box 247 Wentzville, MO 63385
Mike Fanow	2815 Park Place West, Cano, IL 62914
Milford Rivet & Machine Co.	111 Taylor Street Elyria, OH 44035
Minera Mexico International	P.O. Box 4452 New York, NY
Minor Metals, Inc.	New York, NY
Missouri Iron & Metal	754 S. 4th St. St. Joseph, MO 64501
Mitachi	No address given
Modern Printing Company	2617 Oliver Street St. Louis, MO 63103
Modine Manufacturing Co.	1500 Dekoven Avenue Racine, WI 53401
Morris Tick Company, Inc.	501 East Stewart Bloomington, IL 61701
M.S. Kaplan Company	111 East Wacker Drive Chicago, IL 60601
Murphysboro Iron & Metal	1700-1900 Gartside Murphysboro, IL 62966
Nassau Recycle Corp.	AT&T/Nassau Recycle Corp. Room 3WA-148 1 Oakway Berkley Heights, NJ 07922

Nassau Smelting & Refining Corp.	At&T/Nassau Smelting & Refining Corp. Room 3WA-148 1 Oakway Berkley Heights, NJ 07922
National Can Corp.	8101 Higgins Road Chicago, IL 60631
National Metal Company	8339 Lowell Avenue Skokie, IL 60076
National Typographers Inc.	914 Pine Street St. Louis, MO 63101
New Castle Junk Co.	New Castle, PA
New Orleans Public Service, Inc.	P.O. Box 60340 New Orleans
Norms Metal Co.	Louisville, KY
Northbrook Sports Club	Northbrook, IL
Northern Metals Inc.	70 Dock Street St. Louis, MO 63147
Northwestern Bell Telephone Co.	100 S.W. 9th Ave. New Brighton, MN
Northwestern Iron & Metal	438-440 Lake Ave. South Duluth, MN 56802
O'Dell Iron & Metal	100 State Street Madison, IL 62060
Ohio New & Rebuilt	P.O. Box 328 Wapakonite, OH 45859
Okon Iron & Metal Co.	4801 South Lamar P.O. Box 15724 Dallas, TX 75215
Olin Corp.	East Alton, IL 62024
Otis Radio Electric Corp.	1102 Silver Lake Cary, IL 60013
Otto Lerch	415 Hillsboro Farmington, MO 63640

Overland Metals, Inc.	8510 Lackland Road Overland, MO 63114
Palmer-Johnson	No address given
Parkans International Inc.	P.O. Box 15519 5221 Armour Drive Houston, TX 77020
Peoria Battery	Peoria, IL
Pet, Inc.	400 South 4th Street St. Louis, MO 63166
Phelps Dodge	El Paso, TX
Philipp Bros.	1) 8131 Monticello Avenue Skokie, IL 60076 2) 1221 Ave. of the Americas New York, NY 10020
Pielet Bros.	P.O. Box 12 McCook, IL 60525
Plumbing Joint Apprenticeship Training Committee	5733 Elizabeth Ave. St. Louis, MO 63110
Prairie Steel Co.	P.O. Box 284 Havana, IL 62644
Prestolite Batteries	Allied Signal Inc./ Prestolite Batteries P.O. Box 2545R Morristown, NJ 07960-2245
Price Watson Company	1909 No. Clifton Ave. Chicago, IL 60614
Ramak Industries Division of Equipment Engineering Company	P.O. Box 18363 Memphis, TN 38118
Ranken Technical Institute	4431 Finney Ave. St. Louis, MO
Ray-Bar Engineering Corp.	Azusa, CA
Red Diamond Manufacturing Company	RR 2, Box 828 Hot Springs, AR 71901

Redfield Iron & Metal	ZR 359 Redfield, SD 57469
Reeves Scrap Metal	6900 Brush Island Road No. Little Rock, AR 72117
Reinert-Preisler Electrotype Co.	914 Pine Street St. Louis, MO 63101
Reliance Battery Co.	2204 South 8th Street Council Bluffs, IA 51501
Remington Arms Company; U.S. Army Armament Command	Independence, MO 64050
Reve International	6122 W. 55th Ave. Arvada, CO
Rex Curtsinger, Sr.	2204 E. Main Street Decatur, IL 62521
Reynolds Electric[6]	Granite City, IL
Rifkin Scrap Iron & Metal Co.	1445 N. Niagara Saginaw, MI 48602
Romak Industries	P.O. Box 396 Olive Branch, MS
Rosen Metals	P.O. Box 121 Baldwin, WI 54002
Roth Brothers	P.O. Box 158 E. Syracuse, NY
Ruben Metal Co., Inc.	2415 So. Archer Ave. Chicago, IL
S & R Metal Co.	5845 So. May Street Chicago, IL 60621
Salvage Battery & Lead Co.	P.O. Box 179 Mishicot, WI 54228
Sam Allen & Son, Inc.	P.O. Box 2 Pontiac, MI 48056

[6] Reynolds Electric supplied grade "B" lead - specification unknown.

Samencorp Inc.	445 Park Avenue New York, NY 10022
Samuel Hide & Metal	86 East Hunt Pargould, AR
Sanders Lead Co., Inc.	P.O. Drawer 707 Troy, AL 36081
Scheer Shooting Supplies, Inc.	330 West Eagle Arlington, NE 68002
Schwartz Metal Processors and Traders	P.O. Box 218 Marshalltown, IA
Seidenfeld & Son Iron & Metal	401 S.E. 7th Street Des Moines, IA 50309
S & G Metal Industries, Inc.	P.O. Box 2039 Kansas City, KS 66110
Shanfeld Bros.	70 Dock Street St. Louis, MO 63147
Shanke Metals, Inc.	1410 Pierce Ave. St. Louis, MO 63110
Shapiro Sales Co.	5040 North 2nd Street St. Louis, MO 63147
Sherwin Williams Co. Container Division	1717 Gifford Road Elgin, IL 60129
Shostak Iron & Metal	7th and Kindelberger Rd. Kansas City, KS 66115
Sioux City Compressed Steel	214 Court Street Sioux City, IA 51101
Sol Alman Co.	1300 East 9th Street POB 2244 Little Rock, AR 72203
Sol Tick & Co. Inc.	901 Eldorado Street Box 30 Decatur, IL 62525

South Side Machine Works, Inc.	3761 Eiler Street P.O. Box 22199 St. Louis, MO
Southern Iron & Supply Co.	6326 So. Broadway St. Louis, MO 63110
Southside Machine Shop	3761 Eiler Street St. Louis, MO 63116
Southwestern Bell Telephone Co.	15400 E. Truman Road Independence, MO 64050
Spartan Printing Company; Division of World Color Press, Inc.	2nd and Dickey Street Sparta, IL 62286
Springfield Battery Co.	3000 East Cook Springfield, IL 62707
St. Joe Lead[7]	250 Park Avenue New York, NY 10017
St. Louis Bottle Iron & Metal Co.	2039 Cole Street St. Louis, MO 63107
St. Louis Law Printing Co.	812 Arcade Building St. Louis, MO 63101
Standard Lead Co.	15396 Idaho Detroit, MI 48238
Standard Storage Battery Co.	2286 Capp Road St. Paul, MN
Stanford Linear Accelerator	P.O. Box 4349 Stanford, CA 94305
Stanley Toebben	Route 5 Jefferson City, MO 65101
Steel Baling Co. Inc.	1901 Converse, P.O. Box 408 E. St. Louis, IL 62202
Straightway Iron & Metal Co.	1936 Cole Street St. Louis, MO 63106

[7] St. Joe supplied "corroding" and "pig" lead (pure) but also "Doe Run" and "chemical" brands - specification unknown.

Superior Typesetting Company	1709 Washington Ave. St. Louis, MO 63101
Suppo Smelting & Refining Co., Inc.	1240 West Carroll Ave. Chicago, IL 60607
Shur-Start Battery Company	6767 St. Charles Rock Road St. Louis, MO 63133
Swan Rubber Co.	Rt. #2 Stillwater, OK
Texas Mining & Smelting	P.O. Box 559 Laredo, TX 78041
T.G. Marshall Manufacturing Co.	4326 Riverline Drive Earth City, MO 63045
Tri-City Scrap Company	P.O. Box 21199 Louisville, KY 40221
Turner Salvage Co.	Route 1, Box 101 Moorehead, MN 56560
Union Compressed Steel	5200 Main Street Duluth, MN 55807
Union Scrap Co.	210 15th Ave. North Minneapolis, MN 55411
United Scrap Lead	P.O. Box 25 Troy, OH 45373
Unique Art Glass	3649 Market Street St. Louis, MO 63110
University of Illinois at Urbana	223 Administration Bldg. Urbana, IL 61801
U.S. Scrap & Metal Company	P.O. Box 1484 550 Southside Drive Decatur, IL 62526
U.S. Supply Company	901 Farnam Street Omaha, NE 68102
U.S.S. Lead Refinery Inc.	5300 East Kennedy Ave. E. Chicago, IN 46312

Versatile Metals.	P.O. Box 97728 Chicago, IL 60690
Vince Jacks Iron & Metal Co.	6609 Manchester Ave St. Louis, MO 63139
Vincent Brass & aluminum	3334 Rand Road Indianapolis, IN 46241
Waddell Brothers Metal Company	P.O. Box 338 Blue Grass, IA 52726
West End Hide & Fur	Box 1578 Jamestown, ND 58410
Western Electric Co.	A T & T/ Western Electric Co. Room 3WA-148 1 Oakway Berkeley Heights, NJ 07922
Western Gun & Supply	P.O. Box 1848 Grand Island, NE 68801
Westerville Creamery Co.	400 Hazel Street Covington, OH 45318
Wicks Organ Company	1100 Fifth Street Highland, IL 62249
William S. Lasich & Sons	3315 West Point Collinsville, IL 62234
Wisconsin Lead Co.	5116 Lincoln Ave. Milwaukee, WI 53219
Young Radiator Co.	2825 Four Mile Road Racine, WI 53404

Owners/Operators - Past and Present

B.V. & G Transport Co.	John W. Crown VP, Gen. Mgr. P.O. Box 723 Granite City, IL 62040
NL Industries, Inc.	J. Landis Martin, President 3600 Sam Houston Parkway, East Houston, TX 77032
St. Louis Lead Recyclers	Jim Stack Stackorp P.O. Box 280 Granite City, IL 62040 and L. Keith Brunner 124 E. Third Street, Suite 300 Dayton, OH 45402
Taracorp, Inc.	Stanton Sobel, Executive V.P. 900 Ashby Street Atlanta, GA 30318
Trust 454	First Granite City National Bank Trust Officer 1960 Edison Avenue Granite City, IL 62040

ATTACHMENT III

ASSEMBLY OF REMEDIAL ACTION ALTERNATIVES

Attached is Section 3 - Development of Remedial Alternatives from the August 1989 draft Feasibility Study for the NL Industries/Taracorp-Granite City, Illinois Site

SECTION 3 DEVELOPMENT OF REMEDIAL ALTERNATIVES

3.1 Development of Remedial Alternatives

The screening of the remedial technologies summarized in Section 2 eliminated those which were not protective of the public health or the environment or were not technically or economically feasible. This process resulted in the selection of several representative process options as identified in Tables 11 and 12. In this section the selected process options will be combined into a series of remedial alternatives which address each of the media targeted for remediation.

The Remedial Alternatives are illustrated on Table 13. Common to many of the remedial alternatives are institutional controls. The institutional controls available considered in this alternative are summarized below.

Site Access Restrictions - A fence is an effective method for preventing unintentional contact with contaminated soils and discouraging intentional contact.

Restrictive Covenants - Restrictive covenants can be imposed on the use of the property. A property owner may proscribe property use above and below the ground surface. Restrictions against use of the surface part of the property could include prohibitions against any construction which would disturb a surface cap. Restrictions against subsurface use could include prohibitions against excavations into subsurface contamination or installation of borings for any purpose, including ground water withdrawal wells. Institutional controls on property not owned by Taracorp could be implemented either through private agreements or through the EPA's authority to exercise eminent domain.

Covenant Not to Sell Property - Taracorp has the right to covenant not to sell the property. Execution of an instrument is legally binding on Taracorp as well as on its successors and assigns.

Conveyance of Rights to a Third Party - Taracorp could convey portions of the property to another party such as the State of Illinois. Such a conveyance would ensure that institutional controls be maintained in perpetuity.

3.1.1 Alternative A

Monitoring: Air Quality Monitoring; Ground Water Monitoring

Institutional Controls: Site Access Restrictions; Land Use Restrictions; Deed Restrictions; Sale Restrictions

The no action alternative (A) includes a group of activities that can be used to monitor contaminant transport. The sources considered potentially viable include air, surface soils, and ground water. These activities are designed to prevent unacceptable risks to the public posed by the contaminants present in the Taracorp and SLLR piles. It includes institutional controls on the Tarcorp property and other properties where residual concentrations do not meet Remedial Objectives.

Ground water monitoring would be performed twice per year at each of the existing wells illustrated on Figure 7. Moreover, an additional well would be installed adjacent to well 104. This new well, screened at a lower elevation than well 104, would be used to better define ground water quality in the deeper water table aquifer. The analytical program would include pH, conductivity, alkalinity, sulfate, total dissolved solids, arsenic, cadmium, and lead.

High volume air monitors are presently located in Granite City as illustrated in Figure 8. A review of IEPA air monitoring data in Granite City would be done on an annual basis.

An annual report would be prepared which would summarize the results of sampling conducted during the previous calendar year. The report would present the data obtained as well as an interpretation of that data.

The institutional controls pertinent to this alternative include site access restrictions, restrictive covenants, deed restrictions, property transfer restrictions, and private third-party agreements.

3.1.2 Alternative B

Taracorp Pile:	Multimedia Cap, Institutional Controls
Taracorp Drums:	Off Site Recovery at Secondary Lead Smelter
SLLR Piles:	Excavate and Consolidate with Taracorp Pile
Venice Alleys:	Asphalt or Sod Cover Based on Usage
Eagle Park Acres:	Vegetated Clay Cap, Institutional Controls
Area 1 Unpaved Surfaces:	Asphalt or Sod Cover Based on Usage
Area 2 Unpaved Surfaces:	Asphalt or Sod Cover Based on Usage
Area 3 Unpaved Surfaces:	Asphalt or Sod Cover Based on Usage
Monitoring:	Air and Groundwater Monitoring

To implement Alternative B, drums containing lead drosses and other production by products would be removed to an off site secondary lead smelter for lead recovery. Wastes contained in the SLLR piles would be consolidated into the Taracorp pile; the consolidated pile would be graded and capped with a multimedia cap. Figure 9 presents a typical section of the proposed cap as well as potential finished grades. Institutional controls such as site access restrictions, restrictive covenants, deed restrictions, and property transfer restrictions would also be implemented.

Eagle Park Acres would be purchased and a vegetated clay cap meeting ARARs would be installed over the battery case material. Institutional controls such as site access restrictions, restrictive covenants, deed restrictions, and property transfer restrictions would also be implemented.

Venice Alleys would be covered in accordance with present usage. Asphalt would be applied to those portions subject to vehicular or pedestrian use; the remaining areas would be covered with 3 inches of topsoil followed by sod.

Unpaved portions of Areas 1, 2, and 3 would be covered in accordance with present usage. Asphalt would be applied to unpaved driveways and alleys; grassed or open areas would be covered with three inches of topsoil followed by sod. Removal of existing soils would be limited to driveway subgrade preparation, therefore surface elevations would change somewhat depending on surface treatment. Any soil excavated would be transported to the Taracorp pile for use in grading prior to cap installation.

The air and groundwater monitoring included in the no action alternative would also be implemented as part of Alternative B.

3.1.3 Alternative C

Taracorp Pile:	Multimedia Cap, Institutional Controls
Taracorp Drums:	Off Site Recovery at Secondary Smelter
SLLR Piles:	Excavate and Consolidate with Taracorp Pile
Venice Alleys:	Excavate Case Material and Consolidate with Taracorp Pile. Restore Surfaces

Eagle Park Acres:	Excavate Case Material and Consolidate with Taracorp Pile. Restore Surfaces
Area 1 Unpaved Surfaces:	Excavate Soil and Consolidate with Taracorp Pile. Restore Surfaces.
Area 2 Unpaved Surfaces:	Excavate Soil and Consolidate with Taracorp Pile. Restore Surfaces.
Area 3 Unpaved Surfaces:	Asphalt or Sod Cover Based on Usage
Monitoring:	Air and Groundwater Monitoring

To implement Alternative C, drums containing lead drosses and other production by products would be removed to an off site secondary lead smelter for lead recovery. Wastes contained in the SLLR piles would be consolidated into the Taracorp pile; the consolidated pile would be graded and capped with a multimedia cap. Figure 9 presents a typical section of the proposed cap as well as potential finished grades. Institutional controls such as site access restrictions, restrictive covenants, deed restrictions, and property transfer restrictions would also be implemented.

Battery case material would be excavated from both Venice Alleys and Eagle Park Acres and transferred to the Taracorp Pile. These areas would be restored with either asphalt or sod, in accordance with current usage.

Unpaved portions of Areas 1 and 2 would be excavated to a depth of three inches and restored with either asphalt or sod, in accordance with current usage. Excavated soil would be transported to the Taracorp Pile for use in grading prior to cap installation.

Unpaved portions of Areas 3 would be covered in accordance with present usage. Asphalt would be applied to unpaved driveways and alleys; grassed or open areas would be covered with three inches of topsoil followed by sod. Removal of existing soils would be limited to driveway subgrade preparation, therefore surface elevations would change somewhat depending on surface treatment. Any soil excavated would be transported to the Taracorp pile for use in grading prior to cap installation.

The air and groundwater monitoring included in the no action alternative would also be implemented as part of Alternative C.

3.1.4 Alternative D

Taracorp Pile:	Multimedia Cap, Institutional Controls
Taracorp Drums:	Off Site Recovery at a Secondary Lead Smelter
SLLR Piles:	Excavate and Consolidate with Taracorp Pile
Venice Alleys:	Excavate Case Material and Consolidate with Taracorp Pile. Restore Surfaces
Eagle Park Acres:	Excavate Case Material and Consolidate with Taracorp Pile. Restore Surfaces
Area 1 Unpaved Surfaces:	Excavate Soil and Consolidate with Taracorp Pile. Restore Surfaces.
Area 2 Unpaved Surfaces:	Excavate Soil and Consolidate with Taracorp Pile. Restore Surfaces.
Area 3 Unpaved Surfaces:	Excavate Soil and Consolidate with Taracorp Pile. Restore Surfaces.
Monitoring:	Air and Groundwater Monitoring

To implement Alternative D, drums containing lead drosses and other production by products would be removed to an off site secondary lead smelter for lead recovery. Wastes contained in the SLLR piles would be consolidated into the Taracorp pile; the

consolidated pile would be graded and capped with a multimedia cap. Figure 9 presents a typical section of the proposed cap as well as potential finished grades. Institutional controls such as site access restrictions, restrictive covenants, deed restrictions, and property transfer restrictions would be implemented.

Battery case material would be excavated from both Venice Alleys and Eagle Park Acres and transferred to the Taracorp Pile. These areas would be restored with either asphalt or sod, in accordance with current usage.

Unpaved portions of Areas 1, 2, and 3 would be excavated to a depth of three inches and restored with either asphalt or sod, in accordance with present usage. Excavated soil would be transported to the Taracorp Pile for use in grading prior to cap installation.

The air and groundwater monitoring included in the no action alternative would also be implemented as part of Alternative D.

3.1.5 Alternative E

Taracorp Pile:	Multimedia Cap, Supplemental Liner, Institutional Controls
Taracorp Drums:	Off Site Recovery at a Secondary Lead Smelter
SLLR Piles:	Excavate and Consolidate with Taracorp Pile
Venice Alleys:	Excavate Case Material and Consolidate with Taracorp Pile. Restore Surfaces
Eagle Park Acres:	Excavate Case Material and Consolidate with Taracorp Pile. Restore Surfaces
Area 1 Unpaved Surfaces:	Excavate Soil and Consolidate with Taracorp Pile. Restore Surfaces.
Area 2 Unpaved Surfaces:	Excavate Soil and Consolidate with Taracorp Pile. Restore Surfaces.

Area 3 Unpaved Surfaces:	Excavate Soil and Consolidate with Taracorp Pile. Restore Surfaces.
Monitoring:	Air and Groundwater Monitoring

To implement Alternative E, drums containing lead drosses and other production by products would be removed to an off site secondary lead smelter for lead recovery. An impermeable liner would then be installed on a section of Area 1 adjacent to the Taracorp pile. This section would be excavated to a depth of 3 inches prior to liner installation, with the excavated soil staged with the Taracorp pile. The liner would consist of 2 feet of clay, 1 foot of sand (secondary drainage layer), a 60 mil synthetic membrane, and 1 foot of sand (primary drainage layer). A primary and secondary leachate collection system (perforated PVC piping) would also be provided. Excavated soils from Areas 1, 2, and 3 would be placed over the primary drainage layer as a base to protect the liner from damage. Following liner construction, waste materials from the Taracorp Pile, SLLR piles, Eagle Park Acres, and Venice Alleys would be excavated, transported to and placed on the liner. These wastes would be covered and graded with soils excavated from the base of the former Taracorp Pile. A multimedia cap would then be installed over the consolidated pile. Figure 9 presents a typical section of the proposed cap; Figure 10 shows the proposed liner location. Institutional controls such as site access restrictions, restrictive covenants, deed restrictions, and property transfer restrictions would also be implemented.

As discussed above, battery case material would be excavated from both Venice Alleys and Eagle Park Acres and transferred to the newly constructed liner. These areas would be restored with either asphalt or sod, in accordance with current usage.

Unpaved portions of Areas 1, 2, and 3 would be excavated to a depth of three inches and restored with either asphalt or sod, in accordance with present usage. As stated above excavated soil would be transported to the newly constructed liner and placed directly over the primary drainage layer, to protect the synthetic membrane from damage from heavy slag and debris.

Air and groundwater monitoring included in the no action alternative would be implemented as part of Alternative E.

3.1.6 Alternative F

Taracorp Pile:	Multimedia Cap, Supplemental Liner, Recovery of Plastic Battery Case Material and Lead, Institutional Controls
Taracorp Drums:	Off Site Recovery at a Secondary Lead Smelter
SLLR Piles:	Excavate and Consolidate with Taracorp Pile
Venice Alleys:	Excavate Case Material and Consolidate with Taracorp Pile. Restore Surfaces
Eagle Park Acres:	Excavate Case Material and Consolidate with Taracorp Pile. Restore Surfaces
Area 1 Unpaved Surfaces:	Excavate Soil and Consolidate with Taracorp Pile. Restore Surfaces.
Area 2 Unpaved Surfaces:	Excavate Soil and Consolidate with Taracorp Pile. Restore Surfaces.
Area 3 Unpaved Surfaces:	Excavate Soil and Consolidate with Taracorp Pile. Restore Surfaces.
Monitoring:	Air and Groundwater Monitoring

To implement Alternative F, drums containing lead drosses and other production by products would be removed to an off site secondary lead smelter for lead recovery. An impermeable liner would then be installed on a section of Area 1 adjacent to the Taracorp pile. This section would be excavated to a depth of 3 inches prior to liner installation, with the excavated soil staged with the Taracorp pile. The liner would consist of 2 feet of clay, 1 foot of sand (secondary drainage layer), a 60 mil synthetic membrane, and 1 foot of sand (primary drainage layer). A primary and secondary leachate collection system would also be provided. Excavated soils from Areas 1, 2, and 3 would be placed over the primary drainage layer to protect it from damage. Following liner construction, processed waste materials from the Taracorp Pile, as well as excavated materials from the SLLR piles, Eagle Park Acres, and Venice Alleys, would be transported to the liner. These wastes would be covered and graded with soils excavated from the base of the former Taracorp Pile. A multimedia cap would then be installed over the consolidated pile. Figure 9 presents a typical section of the proposed cap; Figure 10 shows the proposed liner location. Institutional controls such as site access restrictions, restrictive covenants, deed restrictions, and property transfer restrictions would also be implemented.

Prior to transport to the newly constructed liner, waste materials in the Taracorp Pile would be processed to recover plastic battery case material and smeltable lead. During the initial excavation, waste materials would be visually segregated:

excavations containing primarily slag would be transported directly to the adjacent liner; those containing significant amounts of plastic battery case material and smeltable lead would be transported to an on-site segregation unit. The commercially available unit would utilize flotation as a recovery mechanism. Recovered plastic would be shipped off-site for use as a raw material. Recovered lead and lead oxide would be shipped to a secondary smelter after drying. Residuals, including slag and rubber case material, would be transported to the liner.

As discussed above, battery case material would be excavated from both Venice Alleys and Eagle Park Acres and transferred to the newly constructed liner. It is thought that these casings are primarily rubber, and therefore not likely suitable for recycling. If significant amounts of plastic casings are excavated, however, they would be processed in the same fashion as the Taracorp pile casings. Venice Alleys and Eagle Park surface areas would be restored with either asphalt or sod, in accordance with current usage.

Unpaved portions of Areas 1, 2, and 3 would be excavated to a depth of three inches and restored with either asphalt or sod, in accordance with present usage. As stated above, excavated soil would be transported to the newly constructed liner and placed directly over the primary drainage layer, to protect the synthetic membrane from damage from heavy slag and debris.

The air and groundwater monitoring included in the no action alternative would also be implemented as part of Alternative F.

3.1.7 Alternative G

Taracorp Pile:	Recovery of Plastic Battery Case Material and Lead, Disposal of Residuals in RCRA Landfill
Taracorp Drums:	Off Site Recovery at a Secondary Lead Smelter
SLLR Piles:	Disposal in RCRA Landfill
Venice Alleys:	Excavate Case Material, Disposal in RCRA Landfill. Restore Surfaces
Eagle Park Acres:	Excavate Case Material, Disposal in RCRA Landfill. Restore Surfaces.
Area 1 Unpaved Surfaces:	Excavate and Restore. Disposal in RCRA Landfill.
Area 2 Unpaved Surfaces:	Excavate and Restore. Disposal in Non-RCRA Landfill.
Area 3 Unpaved Surfaces:	Excavate and Restore. Disposal in Non-RCRA Landfill.
Monitoring:	Groundwater Monitoring

To implement Alternative G, drums containing lead drosses and other production byproducts would be removed to an off site secondary lead smelter for lead recovery. The remaining waste materials in the Taracorp Pile would be excavated, processed to recover recyclable plastic, and disposed of in a RCRA landfill.

Processing would consist of visual segregation during initial excavations to separate non plastic bearing wastes from wastes containing plastics. Non plastic bearing waste would be transported directly to the RCRA landfill; those containing significant amounts of plastic battery case material and smeltable lead would be transported to an on-site segregation unit. The commercially available unit would utilize flotation as a recovery mechanism. Recovered plastic would be shipped off-site for use as

a raw material. Recovered lead and lead oxide would be shipped to a secondary smelter after drying. Residuals, including slag and rubber case material, would be transported to the RCRA landfill.

Battery case material would be excavated from both Venice Alleys and Eagle Park Acres and transported directly to the RCRA landfill. It is thought that these casings are primarily rubber, and therefore not likely suitable for recycling. If significant amounts of plastic casings were excavated, however, they would be processed in the same fashion as the Taracorp pile casings. Venice Alleys and Eagle Park Acres surface areas would be restored with either asphalt or sod, in accordance with current usage.

Unpaved portions of Areas 1, 2, and 3 would be excavated to a depth of three inches and restored with either asphalt or sod, in accordance with present usage. Excavated soil from Area 1 would be transported to a RCRA landfill; excavated soil from Areas 2 and 3 would be transported to a non-RCRA landfill.

The groundwater monitoring included in the no action alternative would also be implemented as part of Alternative G. Long term air monitoring would not be required.

3.2 Screening of Alternatives

The intent of the screening of alternatives step is to eliminate alternatives that are significantly less implementable or more costly than comparably effective alternatives. The screening is conducted on the basis of effectiveness, ease of implementation, and cost.

The factors included under the criterion of effectiveness are a) overall reduction in toxicity, mobility or volume of waste; b) long-term effectiveness and permanence; c) short-term impacts which the alternatives may pose during implementation; and d) how quickly protection can be achieved. Alternatives that do not protect human health and the environment to an acceptable degree are not carried through this initial screening of alternatives, with the possible exception of the no-action alternative (Alternative A). The no-action alternative will be carried through to the detailed analysis step without prior screening, as a baseline for comparison with other alternatives, regardless of the degree of protectiveness it offers.

Implementability is associated with the difficulty in constructing, operating and maintaining a particular alternative. The performance of a remedial action is subject to a number of technical, administrative and logistical issues. These factors are assessed to characterize the implementability of each alternative. An alternative which would be more difficult or time consuming to implement than a comparably effective remedy would not be carried through this initial screening.

Cost factors include costs necessary to perform a remedial action, and any operating and maintenance costs associated with an action. Cost is used to eliminate alternatives which provide a similar degree of protectiveness at a significantly greater cost.

3.2.1 Effectiveness

Each remedial action alternative (B,C,D,E,F,G) would result in the elimination of unacceptable risk to humans and the environment through a combination of containment and treatment technologies. All remedial response objectives would be achieved by each alternative.

Alternative B represents an in-situ containment alternative. As the site is not located within a flood plain, containment of contaminated materials within the capped Taracorp pile would eliminate the potential for direct contact with contaminants and virtually eliminate the potential for transport of contaminants by ground or surface water. The potential for migration of metals would be limited by:

- the installation of a multimedia cap which would eliminate run-on and direct contact of precipitation with the pile;
- the high alkalinity of the ground water;
- the low solubility of metal carbonates; and
- cation exchange within the unconsolidated deposits.
- the clay barrier (10^{-7} to 10^{-8} cm/sec) beneath most of the existing pile

The installation of a multimedia cap over the contaminated materials would also eliminate the potential for direct contact with or migration of contaminants via the air pathway. In addition, capping in-situ would reduce the potential for short term impact to human health and the environment caused by the generation of contaminated dust. Air modeling conducted for another site involving battery case material (Dames & Moore, 1988) concluded that for alternatives involving large scale excavation of materials

"substantial on-site controls would be necessary and there is a possibility that even maximal management controls on-site would not prevent excessive short term off-site impacts".

The installation of caps over waste materials at Eagle Park Acres (vegetated clay) and Venice Alleys (asphalt) would virtually eliminate the potential for direct contact with waste materials and would limit the potential for migration of contaminants off-site. Installation of cover (asphalt or three inches of topsoil plus sod) over contaminated soils in Areas 1, 2, and 3 would effectively limit the migration of contaminants and limit the potential for direct contact with contaminants.

The in-situ containment specified by Alternative B could be implemented in a relatively short period of time, as standard construction techniques would be utilized, and as excavation would be limited.

Alternative C provides an additional level of protection to human health and the environment at Eagle Park Acres, Venice Alleys, Area 1 and Area 2. Implementation of Alternative C requires the excavation of waste materials and contaminated soils from these areas and consolidation of the materials into the Taracorp pile. The potential for migration of contaminants offsite, or for direct contact with contaminants in these areas, therefore, is eliminated. In addition, consolidating contaminated materials facilitates the implementation of institutional controls, which may not be as effectively implemented at multiple remote sites.

The potential for short term impact to human health and the environment caused by generation of contaminated dust could be greater during implementation of Alternative C than Alternative B. Appropriate dust control and respiratory protective measures would be required.

Alternative C would require more time to implement than Alternative B, as excavation is required. The additional time, however, would not be expected to be significant, as mobilization, clearing, and installation of cover is common to both alternatives.

Alternative D extends the additional protection provided by excavation and consolidation of contaminated soils to Area 3. It should be noted that both methods, i.e. cover versus excavation and consolidation, are effective in limiting human contact with contaminated materials and in limiting the potential for transport of materials off-site. The increased margin of effectiveness afforded by excavation and consolidation decreases as contaminant concentration in soil decreases. This margin of effectiveness will require close examination during the detailed evaluation of alternatives.

Alternative D would require slightly more time to implement than Alternative C.

Alternatives E, F, and G differ from Alternative D only in their treatment of the Taracorp pile. They provide the same highly effective level of protection afforded by excavation and consolidation to Eagle Park Acres, Venice Alleys, and Areas 1, 2, and 3 as does Alternative D.

Implementation of Alternative E requires the use of a bottom liner beneath the Taracorp pile. The use of such a liner would prove highly effective in eliminating the potential migration of contaminants. As discussed above, however, a multimedia cap alone was judged effective in eliminating the potential migration of contaminants. The increased margin of effectiveness provided by the bottom liner, therefore, will require close examination during the detailed evaluation of alternatives.

Implementation of Alternative E would require excavation of over 85,000 cubic yards of contaminated material at the Taracorp site. Such excavation could increase the potential for short term impact to human health and the environment caused by generation of contaminated dust. Effective control of such dust could be beyond the capability of present technology; effective controls would have to be developed. The surface area of exposed waste materials would also increase during implementation of the alternative, increasing the risk of contaminant migration off-site due to run-off. Appropriate controls would be required.

Alternative E would be expected to require much more time to implement than Alternative D, due to bottom liner construction and excavation requirements.

Implementation of Alternative F would require the excavation and segregation of the Taracorp pile, including significant manual segregation. The material handling required by this alternative increases the potential for short term impact to human health by both direct ingestion of contaminated materials and inhalation of

generated dusts. The ability to control air emissions during excavation is questioned based on past experience at the site during St. Louis Lead Recycling's operations and air modeling described previously. The effectiveness of this alternative to reduce the volume of waste materials is also questioned; calculations indicate that volume reduction would be approximately 10%. As this alternative includes excavation and a bottom liner for disposal of waste materials, issues discussed above pertaining to Alternative E also apply.

Of all alternatives (A-G), Alternative F would be expected to take the longest amount of time to effect remediation, due to segregation requirements, processing requirements, and bottom liner construction.

Alternative G represents an off-site disposal alternative. As such, excavation and segregation of the Taracorp pile would be required, with the associated potential for short term impact to human health and the environment. As a final disposal option, off-site disposal in a RCRA landfill would be a highly effective method of eliminating direct contact and uncontrolled migration of contaminants. The increased margin of benefit obtained over in-situ containment, however, will require close examination during the detailed evaluation of alternatives. As the alternative includes excavation, recovery, and recycling, the issues discussed pertaining to Alternatives E and F also apply.

In summary, Alternatives B, C, and D are equally effective with respect to the Taracorp pile, and progressively more effective

with respect to the remote areas. As increasing amounts of excavation are required by each, the potential for short term impact to human health and the environment increases, as well as the time required to effect remediation. The time and risk associated with Alternatives B, C, and D, however, do not vary significantly.

Alternatives D, E, F, and G are equally effective with respect to the remote areas, and differ in effectiveness only with respect to the Taracorp pile. Compared to Alternative D, Alternative E is possibly more effective, but significantly more time consuming. Alternative F is of questionable increased effectiveness, as only 10% volume reduction is obtained with significant increase of both time and human exposure to contaminants. Alternative G is effective as a final disposal option, but is also lengthy with significant increase of potential for short term impact to human health and the environment.

3.2.2 Implementability

The excavation, consolidation, capping, and bottom liner installation incorporated into some or all of the alternatives utilize demonstrated procedures and standard construction equipment. These procedures, therefore, do not limit the implementation of any alternative. It should be noted, however, that excavation and restoration of residential and commercial neighborhoods will require significant manual labor due to the small working areas expected.

Recycling of residues from lead furnaces is a technically feasible operation performed at commercial facilities. The number of secondary lead smelters is limited, however, and most are interested in smelting products with sufficient lead content to be economically attractive. The contained drosses, which have a higher lead content than other waste materials, may be acceptable to secondary smelters, as a lead content of 27% is often considered a common minimum cutoff for acceptance. Recycling of the drummed drosses as incorporated into all remedial alternatives would be implemented if a secondary smelter willing to accept the drummed material is located. Otherwise, the drummed drosses would be addressed in the same fashion as the other pile material. The volume of drummed material is not expected to impose time constraints. Lead recovered from the recycling operation incorporated into Alternatives F and G would be addressed similarly.

Given the above analysis, Alternatives B, C, D, and E are expected to be readily implementable.

Alternatives F and G require the segregation and recovery of recyclable plastics and lead from the waste piles. Equipment is readily available to recover casings and lead from batteries; however, utilization of this equipment to recover casings and lead from the blast furnace slag/casing/metallic lead mixture present in the Taracorp pile is questionable. Blast furnace slag would require hand picking from the recovery equipment feed belt, as the recovery equipment is not designed to process materials harder than

lead with linear dimensions exceeding 1 inch. Any slag or debris that does enter the equipment (linear dimensions less than 1 inch) would contaminate the recovered lead, and limit its acceptability as a smeltable material. It should be noted that when this equipment is used to break batteries alone (ideal conditions), the recovered smeltable product is generally only 50-60% lead. There are also limitations with respect to the recycling of plastic battery casings. Plastic casings, which have been exposed to and damaged by sunlight, as a portion of those at the Taracorp pile likely are, are unsuitable as a raw material in the plastics industry. In addition, pilot studies conducted for a similar superfund site (Gould, Inc. Site, EPA Docket Number 1085-05-08-106) indicated that the recovered plastics failed the TCLP test for lead, despite various rinsing schemes. For all these reasons, therefore, the implementability of the recovery portion of Alternatives F and G is questionable.

Alternative G requires the off-site disposal of waste materials in a RCRA landfill. Although the excavation and transport of waste materials is readily implementable, the landfill ban for characteristic wastes expected to be imposed in 1991 could have implications for material which does not pass the TCLP test. This concern will be evaluated in the detailed analysis of alternatives.

In summary, alternatives B, C, D, and E are readily implementable, while the implementability of the recovery/recycling portion of Alternatives F and G is questionable. Land disposal

restrictions may or may not affect the implementability of Alternative G.

3.2.3 Cost

Preliminary remedial cost estimates including capital and annual operation costs were developed for each alternative, and are included as Tables 14 - 20. The total cost of implementing each alternative is as follows:

Alternative	Total Cost
A	$ 475,110
B	$ 5,685,020
C	$ 6,471,000
D	$ 6,835,450
E	$13,065,890
F	$27,333,930
G	$50,353,680

3.2.4 Summary

All alternatives will be evaluated in detail in Section 4.